LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

DESCRIPTION OF ENGINEERING PROGRAMS

http://www.ladpw.org

The Department of Public Works, under Director Donald L. Wolfe, was formed on January 1, 1985 from the former County Road Department, a portion of the Department of County Engineer-Facilities, and the County Flood Control District.

Divided into 19 engineering divisions and two specialized groups, the Department has approximately 3,600 employees in almost 500 different job classifications, including professional, technical, clerical, skilled craft, and unskilled workers. The Department is responsible for the design, construction, installation, operation, maintenance, and/or repair of roads, bridges, airports, sewers, water supply, flood protection and water conservation facilities, and regulatory and ministerial programs for all land development and building construction the County of Los Angeles, Los Angeles County Flood Control District, other special districts, and contract cities that request services. A 24-hour Emergency Operations Center is maintained to respond to problems reported by the public and other agencies as well as major emergencies, such as floods, windstorms, snowstorms, earthquakes, etc., and to monitor various Departmental facilities.

The Department protects property and promotes public safety for those we serve now and in the future. By striving to increase productivity and efficiency while continuing to emphasize and to provide the highest levels of service, the Department looks forward to successfully meeting the challenges of the future through new technology and high standards.

The Department employs a professional staff of over 300 licensed engineers and over 350 other graduate-level engineers. This staff is supported by engineering technicians, inspectors and engineering aids as well as numerous non-engineering classifications. Civil, electrical, and mechanical engineers work closely with experts in numerous specialties within these disciplines to provide water quality analysis, geological reports, structural analysis of high buildings, determination of the seismic stability of dams, solid waste disposal and sewer treatment, for example. Department of Public Works personnel possess the special skills and knowledge, acquired through education, training and experience, to meet the public needs.

WORK ASSIGNMENT

Teams of trained engineers working under professional supervision carry on the work of the Los Angeles County Department of Public Works. Initial assignments may be to teams composed of three to seven engineers of varying rank. Work assigned to new graduate engineers is considered qualifying by the California State Board of Registration for Civil and Professional Engineers for participation in registration examinations. Before being placed on an initial assignment, each newly hired engineer is interviewed and his or her job preference is considered in relation to existing vacancies. Where these do not match, every effort is made to accommodate the engineer later through the Department's rotation program, lateral movement, or through changes at the time of promotion when a position in a preferred field of engineering becomes available.

BUILDING AND SAFETY

The primary function of the Building and Safety Division is the enforcement of the County Building, Mechanical, Plumbing, and Electrical Codes, as well as other State and local requirements related to the construction and occupancy of public and private buildings, other types of structures, and grading work. The Division is also responsible for mitigating unreinforced masonry building hazards and the property rehabilitation program which involves the abatement of public nuisance properties and the repair or demolition of substandard buildings.

The Division provides this enforcement throughout the unincorporated areas of the County, as well as in 17 incorporated Cities that contract with the County for their building department services. The technical office staff reviews building plans and support documents for compliance with the building codes, both architecturally and structurally, as well as providing for energy conservation, sound attenuation, environmental protection, and barrier-free access for physically disabled persons. The field staff inspects the progress of construction, verifying compliance with the approved building plans and other appropriate Codes and Ordinances.

CONSTRUCTION

Each year the Department awards several hundred contracts to private contractors to construct various types of public works infrastructure such as roads, bridges, flood control facilities, water supply systems, and sewers. The Construction Division's mission is to advertise, award, and administer these contracts and inspect the work of the contractors. Both office and field assignments are available and provide opportunities to develop skills in the various aspects of contract administration as well as provide exposure to construction methods and materials.

Construction Division is also responsible for the issuance of permits to private developers and other agencies carrying out projects which impact the County's road or flood control facilities. This involves the careful review of plans to ensure there are no adverse impacts on County facilities and inspection of the work to ensure compliance with the plans.

DESIGN

Design Division is responsible for providing design plans, specifications and cost estimates for roads, bridges, storm drains, debris control basins, water recharge basins, seawater barrier wells, pump stations, and to a lesser extent, sewer and water supply systems, and airport facilities for the unincorporated areas of Los Angeles County and those cities that request County assistance. Other functions of the Division include developing design standards and criteria used by other divisions within the Department and by private industry, providing technical assistance to other divisions and preparing plans for the repair and rehabilitation of the Department's existing facilities.

A continuing growth of population, new environmental regulations, and diverse public interests has placed an increased burden on the infrastructure of Los Angeles County, resulting in greater complexities and requiring very creative solutions. Design Division has responded to this challenge, through training in new technologies, development of new standards and designs and through extensive use of state of the art Computer Aided Design and Drafting (CADD). The Division also plays a critical role in responding to emergencies, developing rapid repair strategies and improvements to protect the life and property of millions of residents.

ENVIRONMENTAL PROGRAMS

The Environmental Programs Division (EPD) is dedicated to protecting public health and preserving the environment through a variety of innovative functions. EPD proactively implements and administers critical programs in the areas of solid waste recycling and disposal, hazardous and industrial waste management, industrial wastewater discharge to public sewer systems, underground storage tanks, graffiti abatement, and landfill gas control systems. EPD provides an excellent opportunity to gain valuable experience in these and other aspects of environmental protection.

One of EPD's long-term goals is to research and implement state-of-the-art technologies to convert municipal solid waste into electricity, green fuel, and other useful products through conversion processes other than incineration. Such innovation and vision demonstrate EPD's commitment to prudently utilize our environment's resources.

Another primary goal of EPD is to reduce the need for landfills by implementing programs to recycle 50 percent of waste materials. To attain and surpass this ambitious goal EPD administers nationally recognized public outreach programs to collect electronics and household chemicals, encourage businesses and residents to recycle and utilize yard-waste composting, and consider other alternative waste disposal mechanisms. Additionally, EPD evaluates site remediation plans to protect valuable groundwater resources against contamination from leaking underground storage tanks, analyzes methane gas levels at landfill sites, and participates in disaster debris removal operations.

FLOOD MAINTENANCE

Flood Maintenance Division has a headquarters office and three field offices, each staffed with a small group of civil engineers that perform design work on various repair, maintenance, and improvement projects on all of the department's flood control facilities, including dams, debris, basins, channels, spreading grounds, pumping plants, seawater barrier projects and dam safety projects. Engineering projects consist of designing retaining structures, stairways, ladders and platforms, access roads and drains, hydraulic weirs, and inlets. The projects involve taking field measurements,

surveying, preparing engineering plans and specifications and requisitioning construction materials. In addition, the engineers provide support to the field crews in reading and interpreting engineering plans, setting field elevations, and modifying engineering plans as required to meet field conditions. The work is very gratifying for the engineer because he can often follow his projects from conception and design through construction.

GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

The Geotechnical and Materials Engineering Division is comprised of the geotechnical engineering, engineering geology, and materials engineering disciplines. The Division performs the review of geologic and soils reports for verification of compliance with the Los Angeles County Building Code requirements for the unincorporated county and contract cities. It establishes and implements policy from a geotechnical standpoint and determines building site stability following emergency situations. The Division, also performs geologic and geotechnical investigations for all county facilities and contract cities. It is responsible for providing recommendations for remedial measures regarding site failures due to landslide, settlement or slippage. The Division also analyzes groundwater conditions and recommends actions for dam safety and seawater barriers. Environmental assessments and investigations of contaminated soil and groundwater are performed and mitigation measures provided by the Division.

The Division is also responsible for the operations of various state-of-the-art testing laboratories. Through these labs, the Division performs materials testing and analysis, concrete, asphalt concrete and reinforced concrete pipe plant inspection, and field sampling and compaction testing. The Division also serves as Materials Engineer to other Divisions within the Department, other County Departments, and several cities in Los Angeles County. As such, it performs concrete and asphalt concrete mix design, roadway structural section design and pavement management.

LAND DEVELOPMENT

Land Development Division provides broad based engineering opportunities to develop workforce excellence in the technical areas of transportation planning, subdivision analysis, hydrology, hydraulics, sanitation, grading, roadways, waterworks and storm water control.

Projects include plan review and approval of all types of public works infrastructure and final maps as part of the land development subdivision process. These subdivisions range in size from two lot parcel maps to 12,000 acre master plan communities including residential, commercial and industrial development. The review and approval process provides the opportunity to gain a working knowledge of the various state and local laws governing land development, as well as the experience to learn the

appropriate design and maintenance standards and policies of the Department of Public Works.

In addition, Land Development Division is on the forefront of watershed management issues which include installation of structural best management practices, such as CDS units in storm drain designs, as well as review and approval of proposals to comply with storm water quality requirements of the Regional Water Quality Control Board.

Land Development Division is very customer service oriented and provides an opportunity to develop sound public relations skills through interaction with the various developers, engineering consultants and property owners subdividing their property.

MAPPING AND PROPERTY MANAGEMENT

The Mapping and Property Management Division provides all real property services for the Department of Public Works. These services encompass the acquisition, management, sale, lease, appraisal and title investigation functions which affect Department properties. In addition, the Division directs, reviews and analyzes all claims against the Department.

The majority of the Department's mapping is created and maintained by this Division using the latest in Computer Aided Design and Drafting technology (CADD) and Geographic Information Systems Software. These systems are used by engineers to perform survey analysis, make engineering calculations and prepare plans and maps for the acquisition of Road and Flood Control right of way. The Division is also working with other divisions in the Department to maximize the use of GIS Technology on an enterprise basis.

OPERATIONAL SERVICES

Operational Services Division comprises two main functions:

1)Traffic Operations/ Electrical Section is responsible for traffic signal system operation and maintenance, traffic sign installation and maintenance, traffic pavement markings, and traffic lane striping for the County and contract cities. It also provides electrical engineering and electrical facility operation and maintenance for Public Works.

2) Facilities Management Group is responsible for maintenance and repair services for approximately 400 buildings owned and operated by Public Works. Services are provided by skilled crafts people including carpenters, locksmiths, welders/fabricators, plumbers, painters, and HVAC technicians. Facilities Management staff determines facility maintenance and refurbishment needs, performs needs assessment, planning and programming, and coordinates the design, and construction of a variety of Public Works building improvements.

The engineer's duties in Operational Services Division entail a wide variety of projects involving design and field work. This includes engineering and preparation of contract plans for traffic signals and other traffic control devices, street lighting systems, facility maintenance planning and programming, management of small building construction or renovation projects, engineering and project coordination for the installation and deployment of advanced traffic system field elements, such as communications systems, traffic detection and surveillance devices, and traffic signal controller modifications, conducting field investigations and studies, reviewing plans prepared by outside agencies, and developing community consensus on project proposals. These projects provide a unique opportunity for an engineer to be closely involved in virtually all aspects of a project from beginning to end, from project initiation, review of field conditions, project design, research and specification of project materials and equipment, preparation of contracting documents, and construction.

The engineer will have substantial opportunity to work directly with Operational Services field crews and crafts people involved in the construction, installation and maintenance of the projects they design. The engineer will have the opportunity to interact with other Divisions, outside vendors and contractors, and with community leaders, residents, and Board Office representatives to promote the public's understanding and support for these projects. In performing these duties, the engineer will have the opportunity to act as project engineer, actively participate in the decision making processes, and develop project management skills. The engineer will work independently or in a small team setting performing multiple tasks and will report directly to a registered civil engineer.

PROGRAMS DEVELOPMENT

The primary responsibilities for Programs Development Division are as follows:

The City Services Section is the liaison between our Department and the 88 cities in the County regarding the sponsoring and coordination of both major capital outlay work and contract maintenance and specialized services.

The Federal Programs Section coordinates and administers State and Federal grants for transportation projects. These grants include funds for the retrofit/replacement of bridges to meet current earthquake and vehicle capacity standards, construction/repair of bikeways, adding lane capacity to County highways, and construction of highway-railroad grade separation projects. They coordinate the State and Federal disaster reimbursement programs. Staff serves as the central point of contract with the regions' railroad companies, the California Department of Transportation, the Federal Highway Administration, the Federal Emergency Management Agency, the State Office of Emergency Services, and the Los Angeles County Metropolitan Transportation Authority.

The Benefit Assessment Section administers the Los Angeles County Flood Control Benefit Assessment Program, provide inquiry investigations on parcel assessments, and evaluate funding projections for the program.

The Flood Management and Project Budget and Coordination Sections; program budget; schedule; and manage all aspects of the Department's flood control, water conservation and road construction, repair, and rehabilitation programs. Their project managers represent the Department as lead contacts with elected officials, the community, and the project team throughout project development, design, review, approval, and construction. Flood control projects typically address areas subject to flooding, mud, and debris flows; and rehabilitation and major repair of the existing flood control facilities. Road projects typically address the repair, reconstruction, and upgrade of the County road infrastructure.

The Transit Operations Section, plans, develops, coordinates, and manages public transportation projects for residents of the unincorporated areas of Los Angeles County. The transportation projects include, park-and-ride lots, transit facilities, and ongoing new and expansion transit services.

The Division also develops and administers special assessment districts, benefit districts and other alternative funding districts, to provide funding for various public works facilities including roads and sewer. A team of specialists with the Division is also tasked with preparing and reviewing environmental documents on Department projects as well as coordinating regulatory permit activities.

ROAD MAINTENANCE

Road Maintenance Division is responsible for the administration, engineering and physical activities necessary to preserve nearly 5,000 miles of roadway infrastructure in a good state of repair in the unincorporated areas and numerous cities that contract for our road maintenance services. The administration and engineering functions are primarily carried out at four field District offices spread throughout the County.

Duties for a Civil Engineering Assistant position include the design and preparation of plans, specifications, and estimates for road maintenance projects (i.e. resurfacing, slurry seal, minor concrete work, tree trimming, pipe slip-lining, and street sweeping contracts); working with the public and field staff to solve maintenance related problems and concerns; investigate and respond to accident claims against the County for allegedly caused by substandard maintenance conditions. Assignments may include a considerable amount of field work as well as the use of AutoCAD, Micro Station, Arc View, and the Microsoft Office suite of software products. This engineering design work is very gratifying to the individual because construction usually takes place very quickly after the completion of the design, allowing the engineer to quickly see the benefits of their work. Benefits of this Division include working in a challenging field office with an abundance of interesting work and a great working environment.

TRAFFIC AND LIGHTING

Traffic and Lighting Division's responsibilities encompass traffic design, traffic investigations, traffic impact studies, traffic congestion relief, and street lighting in the unincorporated areas and contract cities within the County of Los Angeles. Traffic designers work on geometric design and traffic signing for roads and bike paths, signal design for new and modified traffic signals, synchronization of traffic signals along arterial highways, and detour engineering for roadway construction projects.

The Division is involved in the design and administration of consultant and deployment contracts for all types of cutting edge technology for advanced traffic control systems and advanced traveler information systems including Smart Corridor projects and Intelligent Transportation System projects.

Traffic investigators handle requests from citizens for traffic control devices such as traffic signals, warning and regulatory signs, parking restrictions, and speed limits. They also maintain accident records, investigate high accident locations, and all fatal and severe injury accidents to determine appropriate traffic solutions. Engineers conduct traffic studies, bike studies, and traffic impact and highway and intersection capacity analyses. They prepare and review traffic analyses for new developments to determine the traffic impact of the developments and to recommend appropriate mitigation measures. Engineers perform research and studies in Transportation Systems Management and Transportation Demand Management and administer consultant contracts to develop congestion relief programs. The division is responsible for street lighting which involves the design of new or modified street lighting systems and the review of street lighting systems submitted by developers' consultants, as well as the administration of the existing street lighting within the County.

WATER RESOURCES

Water Resources Division directs the operation of flood control and water conservation facilities and performs other related engineering work.

The facilities include 15 major dams and reservoirs, 27 spreading grounds/percolation basins, 500 miles of major channels, and 3 seawater barrier projects (freshwater injection wells and related facilities to prevent the intrusion of saline water into groundwater basins). The Division performs hydrologic and sedimentation engineering studies for construction and improvements of flood control facilities, and for sediment removal projects. It is also involved in the development of hydrologic methods and standards. It performs planning studies, prepares concept plans, and project manages designs for the construction or improvement of water conservation facilities, seawater barriers, debris basins, dams, and reservoirs. It evaluates the effect of major brush fires on the watershed and prepares mudflow mitigation measures. The Division also prepares fluvial engineering studies for natural watercourses, provides engineering advice to communities after major fires in anticipation of mud and debris flow hazards,

and investigates drainage complaints. It coordinates and secures environmental permits and documents for various maintenance and rehabilitation projects.

Additionally, the Division is responsible for the collection, processing, dissemination, and record maintenance of hydraulic and hydrologic data (precipitation, evaporation, stream flow, groundwater, and reservoir data). It is responsible for operation of the dams, spreading grounds, and Flood Alert system during storms and coordinates the recharge of imported and recycled water into the groundwater basins during non storm periods.

WATERSHED MANAGEMENT

An exciting and new direction for the Department is the recent creation of the Watershed Management Division. This new Division is responsible for planning and implementing watershed management projects that protect the County's residents form flooding while integrating the elements of natural resources, groundwater and stormwater conservation, improved stormwater runoff quality, and socio-economic, environmental, and recreational features. The Division's goal is to establish the Department as the leader in planning and implementing watershed management activities in the region.

Watershed Management Division has four sections dedicated to managing the following major watersheds: Los Angeles River, San Gabriel River, Ballona Creek/Malibu Creek/Dominguez Channel, and Santa Clara River/Antelope Valley. Each watershed team, comprised of a Watershed Manager and supporting civil engineers, develops, coordinates and implements projects within their respective watersheds. Projects are multi-purpose in nature and incorporate new technologies and methods for achieving the stakeholders' goals. The four Watershed Teams are assisted by other sections within the Division that focus on flood hazard mitigation, water quality analysis, water conservation studies, funding, legislation, digital mapping, public outreach, and technical research. The support sections coordinate the efforts of the Department and 84 municipalities under the National Pollutant Discharge Elimination System permit program for storm water/urban runoff. They also assess and develop concepts for increasing groundwater recharge, developing solutions to complex flood hazard issues, and interface with State and Federal environmental regulatory agencies.

Watershed Management Division works with various affected stakeholders within the respective watersheds (such as elected officials, local, state, and federal agencies, environmental groups, and industries) to optimize the use of available resources, sponsor research in collaboration with institutions, and establish a forum for disseminating information. Activities within the Division involve engineering analyses and evaluation, often supported with modern computer software. Technical report writing, public speaking, and effective group communication are emphasized in all work assignments.

WATERWORKS AND SEWER MAINTENANCE

The Waterworks and Sewer Maintenance Division is composed of the Waterworks Branch and the Sewer Maintenance Branch.

Waterworks Branch: The Division provides water service to about 200,000 residents in various areas of the County. In all, the Department operates and maintains 5 separate County Waterworks Districts in the Malibu, Val Verde, Kagel Canyon, Acton and Antelope Valley areas. The Division also operates and maintains the Marina Del Rey water system and, on a contract basis, assists the City of Lomita in managing its water quality program.

The Division generates more than 59,000 bi-monthly water bills to provide the revenues needed to keep each District financially solvent. A 159-person staff is responsible for operating and maintaining over 1,100 miles of water mains, 113 storage tanks, 160 pressure regulating and pump stations, 40 wells and over 20,000 hydrants, flushouts and valves, and other fittings and appurtenances to provide continuous water service to the customers. The staff perform ongoing maintenance and water quality monitoring and treatment, emergency leak repairs, answer complaints, resolve billing problems, check proposed developer plans, update water distribution maps, and provide other support for the operation of the District.

The Division also manages the Districts' multi-million dollar capital improvement program to upgrade and replace deteriorated and undersized facilities, including a $12.2 million multi-phase program to upgrade the Marina del Rey water system. The Department recently consolidated the eight County Waterworks Districts in the Antelope Valley into a single District and is participating with other water agencies in conducting a study of the adequacy of the available water supply to support the fast-growing Antelope Valley. The Waterworks Branch has a budget of over $63 million for the current fiscal year and are financed primarily through water sales to customers and general tax levy.

Sewer Maintenance Branch: The Division is responsible for two County Sewer Maintenance Districts, which operate local sanitary sewer systems serving a population of 2.5 million people within the County's unincorporated area and 40 cities. The Districts are responsible to protect the health and welfare of the public by providing dependable, uninterrupted operation of the sewage system. The system consists of 5100 miles of collector sanitary sewers, 154 pump stations and four wastewater treatment plants. The annual budget for system operation, maintenance, and administration is approximately $25 million.

The engineering staff is responsible for providing professional engineering and management services for the operation of the sewage facilities. Engineers perform plan check of new and altered sanitary sewers, pump stations and wastewater treatment plants; provide project management services for rehabilitation/upgrade projects for wastewater treatment plants and the Accumulative Capital Outlay projects to

rehabilitate/replace deteriorated sewer lines and pump stations; and conduct research, engineering studies and pilot tests of wastewater treatment processes and operations. They also interact with public agencies, environmental groups and the community regarding regulatory affairs, such as, Waste Discharge Requirements, National Pollutant Discharge Elimination System permit, effluent standards and compliance, sewage infrastructure and operation analysis

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